ENVIRONMENTAL ASSESSMENT

INSTALLATION OF ICE BREAKER STRUCTURES

SACO RIVER - CAMP ELLIS HARBOR, MAINE

WATER RESOURCES IMPROVEMENT STUDY

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I. Purpose and Need for Action

The basic problem is that the Saco commercial fishing fleet needs protection from ice damage. Chunk ice, because of its excessive weight and thickness, creates an impact load on the fishing boats or any ice breaker or fender system. The chunks have been estimated to weigh from 5-200 tons per floe and generally build up over a period of time and then cut off the river flow during storm conditions, high water or walling trends. It is during these periods that the ice floes can cause navigation difficulties as well as damage to boats utilizing the project. Sheet ice, commonly called "window pane ice," because of its sharp edges will inflict serious damage by cutting, splintering, and tearing into a vessel's hull at its waterline.

To alleviate this condition, the proposed plan of improvement will provide for the construction of a series of nine icebreaker pile structures and two additional pile structures in front of the town landing. The purpose of these structures is to fragment the ice sheets and deflect the ice back into the main channel, away from the anchorage and town landing.

II. Alternatives

To satisfy the need for improvement at Camp Ellis Harbor, several alternative plans have been considered.

Alternate A - (The selected plan). Alternate A provides for the construction of a series of nine icebreaker pile structures and two additional pile structures in front of the town landing.

Alternate B - provides for the same conditions described in Alternate A, in addition to a logboom fender system between the pile structures upstream of the anchorage.

Alternate C - provides for the construction of a stone jetty for the protection of the anchorage from all upstream ice.

Alternate D - provides for the construction of five floating ice breakers connected by a logboom to deflect the ice sheets around the anchorage and also two pile structures in front of the town landing.

Alternate E - provides for the construction of three icebreaker structures, six floating icebreakers, and two pile structures in front of the town landing.

Alternate F - provides for the dredging of a five acre area to the east of the town landing.

No Action. A decision not to install the icebreaker pile structures would result in continued ice damage and seasonal navigation hazards to the resident commercial fishing fleet.

The expected environmental impact of the construction project is minimal; therefore, there are no significant beneficial environmental aspects to the no action alternate. Based on this, the adverse aspects of the no action alternate outweigh the beneficial aspects in terms of overall public interest.

The Selected Plan. The selected plan, Alternate A, was decided upon after a comprehensive comparison of alternatives was made. Studies concerning initial costs, annual costs, benefit/cost ratios, and environmental impacts were conducted for the purpose of selecting the most feasible plan and are discussed in further detail in the Detailed Project Report.

III. Environmental Consequences

The project will have impacts with both short term and long term implications. Physical activities associated with the construction activities will have short term impacts on the aquatic ecosystem. The process of driving the pile structures into the river bed will cause a temporary and very minimal degradation of water quality due to suspension of material in the water column. There will also be temporary disruptions of benthic organisms. These temporary adverse effects may occur during construction; however, conditions will return to normal once the project is completed and the surface of the pilings will, in fact, provide additional habitat for the attachment of a variety of plants and animal life.

Longer term impacts will affect the economic, recreational and aesthetic resources of the project area. By implementing the proposed project, the commercial fishermen will be able to utilize the anchorage at Camp Ellis Harbor throughout the winter months, which should provide additional jobs and revenue for the community. The pile icebreakers will be permanent obstacles in the river that will have to be avoided. However, they are to be spaced far enough apart so that all boats in the anchorage should have no difficulty maneuvering around them. Overall, there are no major long term adverse impacts to the environment which will cause significant problems to the area. The installation of the pilings will have little or no effect on existing or planned land used along the Saco River.

IV. Affected Environment

Marine Facilities. The Saco River (from Saco-Biddeford to the sea) serves as a harbor for fishing vessels, yachts, and small pleasure

craft. Boating activities are centered around recreational uses. In 1975 there was no commercial traffic on the Saco River. A party fishing boat operates from a pier at Camp Ellis. Both fishing and recreational boating compete for space at Camp Ellis.

There are no active commercial wharves at Saco or Biddeford. There are four major marine facilities located on the Saco River,[1]

1. Riverside Anchorage, Glenhaven Circle, Saco is a marina operation consisting of 110 slips. The marina has space to accommodate transients. Fuel and marine supplies are also available.

2. The Saco Yacht Club, Front Street, Saco, is the major private yacht facility on the Saco River. The Yacht Club has approximately 70 slips and 170 members. There are no immediate plans for expansion, although the facility is operating at capacity.

3. Rumery's Boatyard, Inc., 109 Cleaves Street, Biddeford, Maine is a combination marina-boat repair facility. Rumery's has 42 slips for rent. There is a mobilelift (12 ton, 40 feet) available on the premises. Inside storage is available for 50 boats and 24 boats outside. The boatyard custom builds vessels, repairs hulls and inboards, and sells marine supplies.

4. Meeting House Eddy is a 10 acre state administered boat access site located on the Saco River in Biddeford. This is the chief public boat launching site for the lower Saco River. The average daily use of the facility was 15 units on the weekends, and 17 units on the weekdays. Ninety percent of its use was generated from Maine residents.[2]

5. The public dock at Camp Ellis is one of the most important docking facilities on the river. This dock is extensively used by lobster boats and commercial fishermen. The facility is also used by larger recreational boats. The facility is somewhat crowded.

The Saco River from Saco-Biddeford is extensively used for recreatinal boating, primarily power boating. There is also considerable fishing in the river, related to this boating activity.

Hydrology. The Saco River estuary, from the river mouth to the tidewater dam in Biddeford-Saco, is a six mile bedrock channel with highly irregular bottom topography. The circulation pattern within the estuary is controlled by fresh water flows in the Saco River and by tidal currents. On each flood tide, a salt water wedge moves approximately four miles upstream pooling the freshwater discharge until the end of flood when the ebb current carries the lighter freshwater over the salt wedge toward the ocean.[3] This estuary may be

classified as a "horizontal to inclined salt wedge estuary"[4] which exhibits a highly stratified salt gradient with salinity ranging from 0 to 30 parts per thousand (ppt). Deep pockets within the bedrock channel have been observed to collect the higher saline water from a flood tide and retain this salt water through an entire tidal cycle until it is mixed with the salt water of the next flood.

The tide at Saco is semidiurnal. The mean tidal range is 8.7 feet. Mean high tide is 8.7 feet above the mean low water level and extreme low tide is 3.5 feet below the mean low water level. Storm surges up to 12.0 feet above mean low water can be expected at least once or twice yearly.[5]

As a result of the large tidal range and the narrowness of the Saco estuary, strong tidal currents exist in the estuary. During flood tide the deeper currents are stronger than the surface currents. During ebb tide the surface currents are stronger than the deeper currents. Ebb current velocities have been observed to be greater than 3.0 knots on the surface with a turbulent mixing layer along the salt wedge. Maximum flood velocities of 2.5 knots were measured near the mouth of the river and in the vicinity of the deeper pockets in the channel bottom. From March to May heavy freshwater discharges to the estuary from the Saco River can increase the channel depths by as much as 8 feet above high water at Saco. This condition also causes dangerous currents, i.e., greater than 3.0 knots during ebb tide.

Water Quality Description of Saco River Estuary. The waters of the Saco River estuary are presently classified by the State of Maine as SC from the head of tide to the Camp Ellis breakwater.[6,7] As stated in the Maine Water Pollution Control Law, Class SC waters "shall be of such quality as to be satisfactory for recreational boating, fishing and other similar uses except primary water contact. Such waters may be used for the propagation of indigenous shellfish to be harvested for depuration purposes, for a fish and wildlife habitat, and for industrial cooling and process uses."

There are three major wastewater discharges to the estuarine portion of the Saco River, they include the Biddeford and Saco Municipal Sewage Treatment Plants and the treatment plant on Factory Island serving the Saco Tanning Corporation. In addition to the three major wastewater discharges described above, there is a secondary treatment plant at the Saco Industrial Park which treats 25,000 gallons per day of sanitary waste. The State of Maine has also licensed eight discharges of untreated sanitary wastes from residences along the estuary in both Biddeford and Saco.

Tidal Marshes. The Saco River estuary has a 6-mile channel with limited saltmarsh or tidal flat development. There are approximately

304 acres of salt marsh, the most extensive areas occurring adjacent to Biddeford Pool.[8] The salt marshes along the river are "fringe marshes" of predominantly Spartina alterniflora with eelgrass (Zostera marina) in the open water areas.

Commercially and Recreationally Harvestible Shellfish. "Because of bacterial pollution, it is unlawful to dig or take in any manner or to have in possession any clams, quahogs, oysters, mussels, and other marine molluscs from the shores and flats of the Saco River and all tributaries including Biddeford Pool."[9] Closed shellfish areas include Biddeford Pool and areas west of a line extending from the end of the "breakwater" to the most northerly point of Fletcher Neck.[10]

Soft shell clams (Mya arenaria) are known to exist throughout the tidal areas of the Saco River estuary. A survey of soft clams revealed "poor" quantities (0 to 50 bushels/acre) in the Hills Beach Cove area and at Camp Ellis on both sides of the breakwater.[11] These high energy areas are characterized by moving sediments which results in high shellfish mortality and slow growth.

Finfish. The Saco River supports the largest recreational striped bass (Morone saxatilis) fishery of all Maine rivers.[12,13] Striped bass enter the river early to mid-May and remain through November. Fishing activity for stripers peaks during August and, although it tapers off significantly after Labor Day, extends through October. Striped bass are caught throughout the estuary. Although striped bass enter the river, they are not known to spawn in the estuary.

Atlantic mackerel (Scomber scombrus) enter the Saco River during July and August and provide the second most important recreational fishery. Mackerel are generally concentrated in the lower 2 miles of the estuary, with the majority of the fishing activity taking place at Camp Ellis and off the breakwaters.

Spawning runs of anadromous fish are blocked by the dams at Saco-Biddeford. Although two old fishways do exist, fish passage is negligible due to the lack of attraction water. There is presently a small spawning run of alewives (Alosa pseudoharengus) that enter the river during May and early June and spawn in the tailraces of the dams.

A resident population of white perch (Morone americana) is present in the upper reaches of the estuary. The sport fishery for this species is concentrated in the vicinity of Cow Island. American eels (Anguilla rostrata) are present throughout the estuary and provide an incidental fishery. Harbor pollack (Pollachius virens) and winter flounder (Pseudopleuronectes americanus) are also caught by sport fishermen in the lower to mid-estuarine reaches.

Rare and Endangered Species. Generally speaking, there are few rare, endangered or threatened species of fish and wildlife along the Maine coast.(14) Appendix A lists the rare, endangered, and threatened species in Maine, their status, and distribution. A review of a survey of the occurrence of these species revealed that only the Atlantic sturgeon and Atlantic salmon may occur in the Saco River. Sturgeon have not been reported from the Saco River, but they can be expected to occur occasionally in the major Maine rivers. Atlantic salmon have been stocked in the Saco and, although salmon may occur this and the next few summers, the dams at Biddeford and Saco preclude the establishment of a naturally reproducing population.

Historical and Archeological Features. The Maine Historic Preservation Commission has stated that there are no historic sites that should be affected by the project.(15)

Many of the river mouths in Maine served as Indian sites. Camp Ellis now sits atop an old Indian settlement. Indian relics have also been found around St. Francis College. There appears to be no identified archeological sites in the project area.

V. Project Coordination.

Background information in the Saco River Federal navigation project was compiled in 1977 by The Research Corporation of New England under contract to the Corps. The plans of future maintenance work were discussed with all Federal, State, and local regulatory groups at that time. In March 1978 an Environmental Assessment was prepared to cover proposed maintenance dredging action in the river.

Coordination efforts associated with this particular action have been limited to the local area because there is no significant impact in the environment due to the proposed construction work.

Prior to the commencement of any work, a public notice will be issued describing the proposed action plan. Comments by all interested persons and agencies may be submitted to the Corps for a thirty-day period following release of this notice.

VI. Conclusions.

I have reviewed and evaluated, in light of the overall public interest, pertinent information and data concerning the proposed construction of icebreaker pile structures in the Saco River, Maine Federal Navigation Project. This work is needed to alleviate navigational hazards and damage to boats and piers created by winter ice conditions.

Feasible alternatives of this project and their possible consequences have been studied with consideration given to environmental effect, social well-being and economic factors.

I have found that the environmental effects associated with the proposed action have been considered and found to be minimal, and that the work is essential for the safety of those using the Saco River Federal Navigation Project. Therefore, it is my opinion that the total public interest would best be served by the implementation of the proposed project.

5 March 1979
Date

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